WHAT IS CLAIMED IS:

1. A process for producing an anhydrosugar alcohol comprising:

(a) heating a pentitol or hexitol sugar alcohol or monoanhydrosugar alcohol starting material until molten;

(b) dehydrating said molten starting material in the presence of an acid catalyst to form an anhydrosugar alcohol mixture; and

(c) purifying said anhydrosugar alcohol from said anhydrosugar alcohol mixture, wherein said purification comprises distillation of said anhydrosugar alcohol mixture in a first film evaporator.

2. The process of claim 1, wherein said first film evaporator is a wiped film evaporator.

3. The process of claim 1, wherein said acid catalyst a solid acid catalyst.

4. The process of claim 3, wherein said solid acid catalyst is selected from the group consisting of acidic ion exchange resins and acidic zeolite powders.

5. The process of claim 4, wherein said solid acid catalyst is an acidic ion exchange resin.

6. The process of claim 5, wherein said acidic ion exchange resin is selected from the group consisting of AG50W-X12, Amberlyst 35, Amberlyst 15, RCP21H, and Dowex 50Wx4.

7. The process of claim 6, wherein said acidic ion exchange resin is Amberlyst 35.

8. The process of claim 5, wherein said acidic ion exchange resin is present in an amount of from about 0.01 gram equivalents to about 0.15 gram equivalents of resin to sugar alcohol or monoanhydrosugar alcohol starting material.

9. The process of claim 4, wherein said solid acid catalyst is an acidic zeolite powder.

10. The process of claim 9, wherein said acidic zeolite powder is selected from the group consisting of CBV 3024, 5534G, T-2665, and T-4480.

11. The process of claim 1, wherein said acid catalyst is a soluble acid catalyst.

12. The process of claim 11, wherein said soluble acid catalyst is selected from the group consisting of sulfuric acid, phosphoric acid, p-toluenesulfonic acid, and p-methanesulfonic acid.

13. The process of claim 1, wherein said purification further comprises recrystallization of said anhydrosugar alcohol.

14. The process of claim 13, wherein said recrystallization is a melt recrystallization.

15. The process of claim 13, wherein said recrystallization is a solvent recrystallization.

16. The process of claim 15, wherein the solvent is acetone.

17. The process of claim 15, wherein said solvent recrystallization comprises heating said anhydrosugar alcohol with a solvent followed by gradual cooling at a rate of from about 8°C to about 12°C per minute.

18. The process of claim 1, wherein said purification further comprises a solvent wash followed by a filtration.

19. The process of claim 18, wherein said solvent is selected from the group consisting of acetone, ethyl acetate, and ethanol.

20. The process of claim 19, wherein said solvent is acetone.

21. The process of claim 20, wherein said acetone is at a temperature of from about 0°C to about 23°C.

22. The process of claim 1, wherein said purification further comprises distillation of said anhydrosugar alcohol mixture in a second film evaporator.

23. The process of claim 22, wherein said second film evaporator is a wiped film evaporator.

24. The process of claim 22, wherein said distillation in said second film evaporator is performed under the same temperature and pressure conditions as the distillation in said first film evaporator.

25. The process of claim 1, further comprising separation of said anhydrosugar alcohol by centrifugation.

26. The process of claim 1, further comprising separation of said anhydrosugar alcohol by filtration.

27. The process of claim 1, wherein said sugar alcohol or monoanhydrosugar alcohol starting material is selected from the group consisting of arabinitol, ribitol, sorbitol, mannitol, galactitol, iditol, and mixtures thereof.

28. The process of claim 27, wherein said sugar alcohol or monoanhydrosugar alcohol starting material is sorbitol.

29. The process of claim 27, wherein said sugar alcohol or monoanhydrosugar alcohol starting material is mannitol.

30. The process of claim 1, wherein said anhydrosugar alcohol is a dianhydrohexitol.

31. The process of claim 30, wherein said dianhydrohexitol is isosorbide.

32. The process of claim 1, wherein said dehydration is performed at a temperature of from about 98°C to about 191°C.

33. The process of claim 1, wherein said dehydration is performed at a temperature of from about 98°C to about 130°C.

34. The process of claim 1, wherein said dehydration is performed at a temperature of from about 98°C to about 120°C.

35. The process of claim 1, wherein said dehydration is performed at a temperature of from about 120°C to about 130°C.

36. The process of claim 1, wherein said dehydration is performed at a temperature of from about 125°C to about 130°C.

37. The process of claim 1, wherein said dehydration is performed at a vacuum pressure of from about .01 Torr to about 40 Torr.

38. The process of claim 1, wherein said dehydration is performed at a vacuum pressure of from about .01 Torr to about 10 Torr.

39. The process of claim 1, wherein said dehydration is performed at a vacuum pressure of from about 1 Torr to about 10 Torr.

40. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vapor temperature of from about 120°C to about 190°C and a pot temperature of at least the distilling point of the dehydrated anhydrosugar alcohol.

41. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vapor temperature of from about 160°C to about 180°C and a pot temperature of at least the distilling point of the dehydrated anhydrosugar alcohol.

42. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vapor temperature of from about 165°C to about 170°C and a pot temperature of at least the distilling point of the dehydrated anhydrosugar alcohol.

43. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vapor temperature of about 170°C and a pot temperature of at least the distilling point of the dehydrated anhydrosugar alcohol.

44. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vacuum pressure of from about .01 Torr to about 40 Torr.

45. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vacuum pressure of from about 0.1 Torr to about 10 Torr.

46. The process of claim 1, wherein said distillation in said first film evaporator is performed at a vacuum pressure of from about 1 Torr to about 10 Torr.

47. A process for producing an anhydrosugar alcohol comprising:

(a) heating a pentitol or hexitol sugar alcohol or monoanhydrosugar alcohol starting material until molten;

(b) dehydrating said molten starting material in the presence of a solid acid catalyst to form an anhydrosugar alcohol mixture;

(c) distilling said anhydrosugar alcohol mixture in a first film evaporator to produce a first anhydrosugar alcohol distillate; and

(d) further purifying said anhydrosugar alcohol from said first anhydrosugar alcohol distillate.

48. The process of claim 47, wherein said first film evaporator is a wiped film evaporator.

49. The process of claim 47, wherein said further purification of said first anhydrosugar alcohol distillate comprises distillation of said first anhydrosugar alcohol distillate in a second film evaporator.

50. The process of claim 49, wherein said second film evaporator is a wiped film evaporator.

51. The process of claim 47, wherein said further purification of said first anhydrosugar alcohol distillate comprises solvent recrystallization of said first anhydrosugar alcohol distillate.

52. The process of claim 47, wherein said further purification of said first anhydrosugar alcohol distillate comprises melt recrystallization of said first anhydrosugar alcohol distillate.

53. The process of claim 47, wherein said further purification of said first anhydrosugar alcohol distillate comprises a solvent wash followed by a filtration.

54. The process of claim 47, wherein said dehydration is performed at a temperature of from about 120°C to about 130°C.

55. The process of claim 47, wherein said dehydration is performed at a vacuum pressure of from about 1 Torr to about 10 Torr.

56. The process of claim 47, wherein said distillation in said first film evaporator is performed at a vapor temperature of from about 165°C to about 170°C and a pot temperature of at least the distilling point of the dehydrated anhydrosugar alcohol.

57. The process of claim 47, wherein said distillation in said first film evaporator is performed at a vacuum pressure of from about 1 Torr to about 10 Torr.

58. The process of claim 47, wherein said sugar alcohol or monoanhydrosugar alcohol starting material is sorbitol.

59. The process of claim 47, wherein said anhydrosugar alcohol is isosorbide.

60. The process of claim 47, wherein said sugar alcohol or monoanhydrosugar alcohol starting material is mannitol.

61. The process of claim 47, wherein said anhydrosugar alcohol is isomannide.

62. The process of claim 47, wherein said solid acid catalyst is an acidic ion exchange resin.

63. The process of claim 62, wherein said acidic ion exchange resin is Amberlyst 35.

64. The process of claim 47, wherein said solid acid catalyst is a zeolite powder.

65. A process for producing isosorbide comprising:

(a) heating sorbitol powder at a temperature of from about 98°C to about 105°C until molten;

(b) dehydrating said melted sorbitol in the presence of an acidic ion exchange resin, under vacuum pressure of from about 1 Torr to about 10 Torr, and at a temperature of from about 120°C to about 130°C to form an isosorbide mixture, wherein said acidic ion exchange is resin present in an amount of from about 0.01 gram equivalents to about 0.15 gram equivalents of resin to sugar alcohol or monoanhydrosugar alcohol starting material;

(c) subjecting said isosorbide mixture to a first distillation at a pot temperature of from about 160°C to about 170°C, a vapor temperature of from about 160°C to about 190°C, and a vacuum pressure of from about 1 Torr to about 10 Torr to form a first isosorbide distillate, wherein said first distillation is performed in a wiped film evaporator;

(d) subjecting said first isosorbide distillate to a second distillation at a pot temperature of from about 160°C to about 170°C, a vapor temperature of from about 160°C to about 190°C, and a vacuum pressure of from about 1 Torr to about 10 Torr to form a purified isosorbide, wherein said second distillation is performed in a wiped film evaporator; and

(e) collecting said purified isosorbide.

66. A process for producing isomannide comprising:

(a) heating mannitol at a temperature of from about 98°C to about 105°C until molten;

(b) dehydrating said melted mannitol in the presence of an acidic ion exchange resin, under vacuum pressure of from about 1 Torr to about 10 Torr, and at a temperature of from about 120°C to about 130°C to form an isomannide mixture, wherein said acidic ion exchange is resin present in an amount of from about 0.01 gram equivalents to about 0.15 gram equivalents of resin to sugar alcohol or monoanhydrosugar alcohol starting material;

(c) subjecting said isomannide mixture to a first distillation at a pot temperature of from about 160°C to about 170°C, a vapor temperature of from about 160°C to about 190°C, and a vacuum pressure of from about 1 Torr to about 10 Torr to form a first isomannide distillate, wherein said first distillation is performed in a wiped film evaporator;

(d) subjecting said first isomannide distillate to a second distillation at a pot temperature of from about 160°C to about 170°C, a vapor temperature of from about 160°C to about 190°C, and a vacuum pressure of from

about 1 Torr to about 10 Torr to form a purified isomannide, wherein said second distillation is performed in a wiped film evaporator; and

(e) collecting said purified isomannide.